L.S.F.

CHM 201 exam1 SOLUTION

ALWAYS READY TO HELP!

1. **B**
2. **C**
3. **A**
4. **A**
5. c a
6. **E**
7. b
8. **D**
9. **C**
10. **C**
11. **D**
12. **C**
13. e
14. **A**
15. **A**
16. **A**
17. **D**
18. **D**
19. e d
20. **D**
21. **B**
22. **A**
23. **A**
24. **B**
25. **E**
26. **E**
27. **A**
28. **A**
29. **D**
30. **C**

Subjective:

(I) $4NH_3(g) + 7O_2(g) \longrightarrow 4NO_2(g) + 6H_2O(l)$

4 7 4 6

1.5 mol 1.5 mol

$n_{H_2O} = \frac{27}{18} = 1.5\,mol = n_{O_2\,reacted} = n_{NH_3\,reacted}$

$n_{NH_3\,left} = \frac{8.52}{17} = 0.5\,mol$

$\Rightarrow n_{NH_3\,i} = n_{NH_3\,left} + n_{NH_3\,react} = 2\,mol$

$m_{NH_3\,initial} = 2 \times 17 = 34\,g.$

II $(AgNO_3 + NaNO_3) + BaCl \rightarrow AgCl.$

$m_{AgCl} = 3.5g \Rightarrow n = 0.024. = n_{Ag} = n_{AgNO_3}$

$\Rightarrow m_{AgNO_3} = 4.148 \Rightarrow \%\, m_{AgNO_3} = \frac{4.148}{6.54} \times 100 = 63.43\%$

III -

$$MnO_4^- + H_2O_2 \longrightarrow Mn^{2+} + O_2$$

2 | $MnO_4^- + 8H^+ + 5e^- \rightarrow Mn^{2+} + 4H_2O$

5 | $H_2O_2 \rightarrow O_2 + 2H^+ + 2e^-$

$$2MnO_4^- + 5H_2O_2 + 6H^+ \rightarrow 2Mn^{2+} + 5O_2 + 8H_2O$$

$$2CV_{MnO_4^-} = 5C_{H_2O_2}V_{H_2O_2} \Rightarrow V_{MnO_4^-} = \frac{5 \times 0.15 \times 75 \times 10^{-3}}{2 \times 0.15}$$

$$V_{MnO_4^-} = 187.5\,mL$$